S.T.O.P. – Safe Tables Our Priority

Working Together To Make Safe Food A Reality

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12 November 2002

U.S. Food and Drug Administration
Dockets Management Branch (HFA-305)
5360 Fishers Lane, Room 1061
Rockville, MD 20852

RE: Docket Number 02D-0333; Juice HACCP Hazards and Controls Guide, First Edition

Safe Tables Our Priority is a nonprofit, grassroots organization consisting of victims of foodborne illness, family, friends and concerned individuals who recognize the threat pathogens pose in the U.S. food supply. We count among our members victims of outbreaks from *E. coli* O157:H7 contaminated apple juice and *Salmonella* contaminated orange juice. S.T.O.P.'s mission is to prevent unnecessary illness and loss of life from pathogenic foodborne illness. We have previously submitted comments on this topic for:

- o the February 3, 1997 docket on the topic of juice safety;
- o the September 12, 1997 docket for FDA's Notice of Intent on Juice Safety;
- o the May 26, 1998 docket on FDA's Proposed Rule on Juice Labeling;
- o the August 7, 1998 docket on FDA's Proposed Rule for Juice HACCP;
- o the January 19, 1999 docket on Citrus Juice Scientific Technical Meetings.
- o the January 24, 2000 docket on the NACMCF Meeting on relative safety or unpasteurized citrus juices

We appreciate the opportunity to comment on CFSAN's Guidance on Juice HACCP Hazards and Controls. We consider this a very important step in clarifying aspects of the juice HACCP law for producers.

Our comments today are organized as follows:

02D-0333 C10

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I. Overview

The recently released First Edition of Draft Guidance for Juice HACCP achieves FDA's basic purpose of clarifying the juice HACCP regulation, with exceptions that S.T.O.P. will enumerate below. However, in attempting to cover the wide range of topics and control points that the regulation addresses, it may lose track of the original purpose of the regulation, and unintentionally may demotivate the intended audience from addressing that purpose.

The final juice HACCP regulation was the product of tireless efforts on the parts of government, industry and consumer groups addressing the very specific issue of microbial contamination, and specifically enteric microbial pathogens. During this deliberation process, literally hundreds of Americans continued to be poisoned by pathogenic contamination in undertreated juice. S.T.O.P. is not arguing that CFSAN should downplay the significance of chemical and physical hazards or of toxins that are the byproduct of microbial contamination upon which CFSAN has elaborated extensively; however, we strongly recommend that this document clarify:

1) the need for controlling microbial contamination,
2) the potential for overwhelming the pasteurization process,
3) the opportunities for processors to improve their chances of controlling contamination outside of the HACCP process, and
4) specific examples of the types of processors addressed by the rule.

1) The Need for Controlling Microbial Contamination

In many of its public comments, S.T.O.P. has urged CFSAN to create a chart that expresses the sheer number of juice outbreaks that the U.S. has faced in the last seven years, along with the number of consumers affected and how they were affected, accompanied by the data of hypothesized sources of contamination. We have attached an example of such a chart in Appendix A. Such a chart would serve two critical purposes in the Guidance document.

First, it would give producers a "fighting chance" at identifying the types of on-farm controls processors might like to include in their contracts with suppliers. Because many of the incidents of contamination in untreated juices have occurred before the fruit arrived at a plant, and many have "yet to be determined," this would be appropriate. Indeed, with this in mind, it might also be desirable to have a second chart that describes outbreaks in Canada and Australia, which highlight additional ways of contamination entering the juice production process.

Second, it conveys the very real data behind the purpose of the HACCP law. It is unfortunately true that some members of industry are unaware of how many people, particularly children, as well as different suppliers and companies, have been embroiled in ongoing U.S. juice outbreaks. CFSAN unintentionally demotivates producers when it fails to provide the data about the breadth and depth of juice outbreaks prior to introduction of the regulation. When CFSAN couples this with Guidance that emphasizes physical, chemical and toxin related hazards at the same level with microbial contamination, the effect is to focus the producers first on those hazards and to present an argument that all microbial contamination is handled by pasteurization.

2) The Potential for Overwhelming the Pasteurization Killstep

In section VC, Control Measures for Biological Hazards, CFSAN needs to be more explicit about the potential for overwhelming a "minimum" pasteurization process. The phrase

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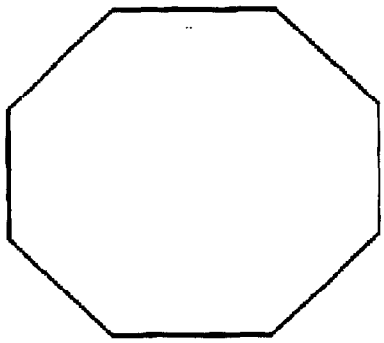

FAX: 12 Pages, Including Cover

Date: Monday, November 18, 2002

To: U.S. Food and Drug Administration
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From: Laurie Girand, Produce Programs Manager
DIRECT PHONE: 011-31-40-222-3352

Re: Docket 02D-0333, Juice HACCP Hazards and Controls Guide, First Edition

MEMO:

Please see attached.

Laurie Girand

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"The initial number of pathogens present in your untreated juice is likely to be far less than 10^5 organisms per gram, i.e., only 10^1 or 10^2 organisms per gram."

is inaccurate without some qualification. Perhaps, rather than say "is likely to be," CFSAN intended to say "should be on average." That the pathogens are "likely" to be few is only true if all procedures are followed and relatively sanitary inputs are used. Indeed, a U.S. apple juice outbreak was traced to a "model" facility whose only immediately obvious issue was with the quality of incoming fruit. Thus, this sentence might better read "Presuming a meticulous HACCP plan is in place and followed and incoming produce is of appropriate quality, the initial number..."

This section would be an appropriate location for CFSAN to address that an otherwise seemingly powerful killstep can be overwhelmed by bad input. A simple example, such as illustrating that if heavily contaminated fruit came into a process where one or two HACCP controls were not adequately monitored, would at least demonstrate the need for close to attention to these HACCP details, which is otherwise not illustrated in the document.

3) Additional Opportunities for Controlling Contamination

CFSAN and S.T.O.P. now have an extensive list of potential sources of contamination that might come in on incoming fruit or juice. Amongst these is the use of drop fruit, the use of contaminated water for irrigation or for mixing with pesticides, and the contamination of fruit or juice in transport. As mentioned above, a chart describing these potential sources of contamination would edify producers about the need to exert some control over inputs (once again, to ensure that the HACCP process is not overwhelmed) through GMPs or otherwise. A paragraph on the subject would be well worth the effort.

In addition, in Table 2, Hazard Analysis Summary Table (for Pasteurized Refrigerated Apple Juice) and Table 4. Hazard Analysis Summary Table (for Not-from-concentrate Pasteurized Orange Juice), there are no references under "What preventative measure(s) can be applied to prevent/reduce/eliminate the hazard?" to the use of tree picked fruit, rejection of incoming products, or culling to reduce the hazard. It is possible that CFSAN intentionally excluded these items because they do not "count" toward the 5 log reduction. Yet, they could play a role in whether a 5 log killstep is overwhelmed. Therefore, we would encourage CFSAN to find a way to express that these are still valuable steps to take. To do otherwise is to unintentionally discourage processors from these practices.

4) Specific Examples of the Types of Processors Addressed by the Rule

Perhaps one of the biggest challenges in applying this regulation will be in aiding juice processors to identify themselves as such. Ambiguity abounds and is not dramatically clarified by the first draft of the Guidance. We would recommend a section that describes different types of businesses and whether the rules applies to them. Examples would include: a grocery store selling both packaged orange juice and orange juice by the glass through a juice bar; a grower that produces apple juice at a facility on one side of the orchard but sells it by the cup and bottle at a roadside stand three acres away across the same property, and a smoothie producer that uses orange juice as 25% of a mixture that includes strawberry and banana puree. Likewise, the applicability of the regulation to hard apple cider and to retailed juice sold frozen as treats-on-a-stick should be addressed.

II. Comments Pertinent to Specific Sections

A. Executive Summary Section

In the Executive Summary section, there is a paragraph that reads:

"Retail establishments or businesses that make and sell juice directly to consumers and do not sell or distribute juice to other businesses are exempt from the juice HACCP regulation, but must comply with any applicable state regulations."

This paragraph implies that retail juice producers of packaged products, such as grocery stores, are exempt from the juice HACCP regulation and are no longer required to label. Therefore, this paragraph needs to be much more explicit about how these retailers are affected by the rule, and we strongly urge CFSAN to separately notify grocers' organizations of the changes in the rules. Also, there should be a paragraph in the Executive Summary addressing whether any juice producer will still be covered by the juice labeling rule once all the producers fall under the Juice HACCP rule.

B. Terms and Definitions

The Guidance presently reads: *"Cleaned means washed with water of adequate sanitary quality."* Meriam-Webster's definition (Third New International Dictionary) of "clean" is "free from matter that adulterates, contaminates or pollutes." The college dictionary indicates "free from dirt or pollution." "Wash" is "to clean by the action of water or other liquid." Unfortunately, as CFSAN defines "cleaned," it is not equivalent to that of the dictionary. We would discourage CFSAN from perpetuating the unclear language of the regulation in the Guidance because the Guidance is intended to enlighten its readers. A term more appropriate than "cleaned" may indeed be "rinsed" or "washed." Thus, the Guidance could define "washed" as "rinsed with water of adequate sanitary quality until there is no visible detritus."

The Guidance also presently reads: *"Culled means separation of damaged fruit from undamaged fruit."* S.T.O.P. respectfully requests that CFSAN clarify whether it is referring to all forms of damage, microscopic or otherwise. Presently, it is possible to detect "dirt" on fruit, which otherwise appears "clean" to the naked eye, with black light. In the future, it may be possible to identify microscopic damage.

The Guidance presently reads: *"Fallen fruit means fruit that has fallen naturally from the tree to the ground in an orchard. It does not include mechanically harvested fruit, which is obtained by shaking the tree and collecting the fruit from the ground with appropriate mechanical machinery; also called grounders, windfall fruit, drops."*

Subsequently, this term is used in phrases such as: "Fallen fruit... are more susceptible to the growth of patulin producing molds." Does CFSAN have data that shows that fruit the was mechnically harvested and touched the ground is less susceptible to the growth of patulin producing molds? If the fruit touches the ground for five hours, but was mechanically harvested, is it less susceptible? Microbial contamination does not make a distinction between fruit that has fallen to the ground by mechanical vs. "natural" means. S.T.O.P. strongly disputes that this is the definition which CFSAN should use for describing fruit that has touched the ground. CFSAN must distinguish between fruit that has come into contact with dirt, and fruit that has not. In place of this industry-favorable definition of "fallen fruit," the document should refer to "grounders" as any fruit that has come into contact with the ground. This definition is not only critical for patulin producing molds, but also for microbial contamination.

The Guidance presently reads: *"Retail Establishment means an operation that provides juice directly to consumers and does not sell or distribute juice to other businesses. The term "provides" includes storing, preparing, packaging, serving, and selling juice."* This definition is very ambiguous, and suggests that grocery stores do not have adhere to the HACCP regulation. Examples would help to clarify this.

In the Definitions section, S.T.O.P. notes that "trimming," which is used frequently throughout the Guidance is not defined. CFSAN needs to include a definition for "trimming," which appears to be the removal of bruises or bad spots, but could include cutting off a moldy spot when the spores are still unseen on another part of the apple. There are seventeen references to "trimming" in the document. CFSAN should also clarify at what point a piece of fruit should no longer be trimmed but instead should just be thrown out.

Lastly, the Guidance includes under the definition of "Shelf Stable Product" the following examples:

> • *acidic shelf stable juices like canned orange juice, which are made using a single thermal processing step*
>
> • *juice concentrates like orange juice concentrate in which all ingredients of the concentrate receive a thermal concentration process*

It would be better if CFSAN used at least one example that was not orange juice. Also, the use of the term "acidic... orange juice" implies that when orange juice becomes less acidic, it no longer qualifies as shelf stable. The Guidance should also mention "juice box" style packaging, which is now a significant part of shelf stable industry, perhaps an even greater part than canned juice.

C. Overview of Juice HACCP

In Section IIIA, Compliance required for All Juice Processors, the Guidance once again indicates that all retail establishments are exempt from the regulation. As previously mentioned, grocery stores selling that produce their own, packaged juice **do** fall under the regulation. In addition, a retail producer such as an apple orchard that produces both packaged and juice by the glass might misunderstand the language currently in the Guidance. We advise CFSAN to clarify this.

In Section IIIA3.0, the Guidance indicates that a producer can import juice from a country that has an appropriate memorandum of understanding. It is S.T.O.P.'s understanding that at this time, no countries presently have such a Memorandum. We believe that the Guidance should therefore indicate as such: "As of <<date>>, the date of the publication of this Guidance, no countries have such an MOU with the U.S." In addition, CFSAN should develop an "easy" way for processors to identify if such an MOU exists, which could be a webpage. Therefore, the previously recommended sentence could be followed by: "However, CFSAN has established a page at its website: www.cfsan.fda.gov/etc. where we will list countries that are presently developing or have such an MOU so that juice processors can quickly identify whether they are covered by an MOU."

In Section IIIA4.0, CFSAN attempts to distinguish between juice sold as an ingredient vs juice that falls under the regulation. S.T.O.P. requests that CFSAN clarify this paragraph. For example, how much juice and fruit puree must be in a beverage to deem it a juice under this regulation. If it is 90% fruit juice and 10% yogurt, is it still a juice?

D. Some Key Requirements of the Juice HACCP Regulation

In Section IIIB1.0, the Guidance indicates: *"You may continue to use the label warning statement until your applicable effective date. For example, after January 22, 2002, small businesses and very small businesses may still use label warning statements for an additional one and two years respectively."*

S.T.O.P. believes that the appropriate language for this is "must" and not "may" with the additional information: "as long as a HACCP plan is not in place." Where warning labels are required, they are still required.

In Section IIID 1.0, the Guidance again does not address that a grocery store that produces its own juice is a retail establishment that falls under the HACCP regulation. In addition, it might be helpful if CFSAN could clarify whether a processor that makes its juice and sells its at a roadside stand, where the stand and the processing facility are separated by a given distance, falls under the regulation. S.T.O.P. believes that such a practice might violate the "processed and packaged in the same facility" aspect of the regulation.

In Section IIID3.0, the Guidance indicates that *: "The juice HACCP regulation applies only to juice that is sold either as juice or for use as an ingredient in beverages and not to any other fruit or vegetable product."* This would specifically exempt frozen-juice-on-a-stick products which would seem to be otherwise covered by the regulation. We would ask that CFSAN clarify its position on this.

E. Juice Hazard Analysis

In Section IVA1.0, the Guidance indicates: *"you are required to produce, for each type of juice, a written hazard analysis...unless different types of juice have identical hazards and control measures and then they can be grouped in one hazard analysis."*

STOP objects to encouraging processors to believe that a HACCP plan can simply be copy/pasted from one type of juice to another; this encourages the juice processor to think that it is exempt from this task if it only deems the juices as having identical hazards and control measures. Perhaps, CFSAN wishes to imply that grapefruit and orange juice are so similar that identical plans could be developed. If CFSAN has a good example of how it believes this to be true, it should give a good example.

In Section IVA2.0, the Guidance should give examples of control points or failures in GMPs where contamination has resulted in outbreaks. This can be an appendix with examples of contaminated fruit or contamination in tanks or lack of testing. Examples of hazards that have caused outbreaks make the concept of "reasonably likely to occur" more concrete.

The Guidance is too abbreviated in Section IVC1.11, Enteric Microbial Pathogens. Repeated outbreaks from unpasteurized juice were the catalyzing factor that brought about the juice HACCP regulation. However, as a processor reads section IVC1.0 , it would could reasonably conclude that tin and lead, which alone are described in a page and a half of text, and other chemical contaminants described in detail in this document, are the critical safety issue in juice. CFSAN needs to do a better job describing how pathogenic contamination arrives in juice.

For example, in section IVC1.25, the document states "Lead is especially hazardous to young children." There is no such comparable statement under Enteric Pathogens of the

at-risk groups. Likewise, there is a long description under tin and lead about how such chemical contamination has come about. There is only a passing reference to contaminated produce in the section on Enteric Pathogens. Likewise, there is a reference to a specific type of produce, carrots, in the section on lead. There is no similar description under Enteric Pathogens.

Unless CFSAN seeks to educate producers as to the reasons why the Juice HACCP rule was developed, it will always have undermotivated compliance. How can juice processors believe there own control points could be an issue without access to examples of how similar control points and GMPs have been an issue in the past?

To stress the import of this regulation, the Guidance *description "Juices containing enteric microbial pathogens such as E. coli O157:H7, various Salmonella species, and the protozoan parasite Cryptosporidium parvum have caused serious foodborne illness outbreaks" should be followed with "resulting in deaths."* This is very important. CFSAN should not encourage processors to believe that this regulation is an exercise for the sake of regulation but instead that it has very critical importance for consumers.

To clarify the role of animal contamination, the *sentence "Because these microorganisms inhabit the intestinal tracts of animals, they may contaminate produce in environments where animals and manure may be present"* should be changed to "These microorganisms inhabit the intestinal tracts of animals; when animals and their manure or feces share proximity in an environment, produce can become contaminated, either directly or indirectly through such means as contaminated irrigation water or runoff." It is important to identify indirect means as well as to identify direct contamination means. Also, manure is considered a term for the feces of farm animals and has positive connotations; yet, contamination via the feces of wild animals has been implicated in juice outbreaks. Hence, the need to clarify that the source can be wild animals as well.

Section IVC1.12 Other Bacterial Hazards raises the topic of *Listeria monocytogenes*. Neither in this section nor the section IVC2.0 do the Guidelines describe that *Listeria monocytogenes* has a high fatality rate amongst the elderly, causes neonatal death and results in infections which can leave a newborn with brain damage. CFSAN needs to describe the consequences of these infections. Otherwise, when the Guidance describes *Listeria monocytogenes* as "ubiquitous in nature," it undermines the expression of the need for testing for the organism.

In Section IVC2.0 Evaluate All Potential Hazards, S.T.O.P. respectfully requests that the paragraph on enteric pathogens be the first paragraph in this section, as the need to control enteric pathogens is the primary purpose behind the Juice HACCP Rule. The line "have caused serious foodborne illness outbreaks due to consumption of contaminated juice" should be followed by "which resulted in hospitalizations and death." It would also be desirable to express how many outbreaks have been caused, so that the sentence would read "have caused an identified x serious foodborne illness outbreaks due to consumption of contaminated juice which resulted in hospitalizations and death." Of course, a timeframe would also then be desirable within the sentence.

F. Control Measures

In Section VB1.0 GAPS, the Guidance reads: *"However, if a hazard originating from the agricultural environment is determined to be reasonably likely to occur on your incoming fruit, pursuant to 21 CFR 120.8 (a), it must be identified in your hazard analysis and controlled through your HACCP plan."* CFSAN should give examples of situations which

would concern juice producers: "such as the use of contaminated irrigation water or pesticides mixed with river water" could be inserted between "hazard" and "originating."

Section VC1.1 again refers to *Listeria monocytogenes*. Newspaper articles have indicated that unpasteurized juice manufactured by Odwalla in the year prior to its outbreak was contaminated with Listeria. If CFSAN has not yet conducted tests on the growth of Listeria in unpasteurized juices, it should. If CFSAN has data on the presence of Listeria in unpasteurized juices, it should mention it in this section. This might be an alternate section where CFSAN can identify the consequences of *Listeria* infections, as recommended in Section E.

In Section VC2.0, the Guidance states: *"You may extract juice from the fruit in one location and ship the untreated juice to another plant for processing (i.e., to achieve the 5-log pathogen reduction requirement) and packaging. If you do this you should obtain assurance that the juice will be given the required 5-log treatment at the other processing location."* The language in these two sentences is ambiguous, particularly the reference to the "other processing location." It would be better to replace the word "another" with "a second," and then replace the word "other" with "second" to clarify to which plants CFSAN is referring.

Section VC5.2 describes the need for higher temperatures owing to recently determined data related to survival of *Cryptosporidium parvum*. Safe Tables Our Priority appreciates that, with the new data coming to light, CFSAN has made the effort to explain the need for control of this parasite as well as the bacteria.

In Section VC5.32, the Guidance says: *"The effectiveness of given UV treatment conditions may vary from one juice to another."* It would be appropriate for CFSAN to say that "the effectiveness of given UV treatment conditions varies with the opacity of the juice and therefore may vary between different types of juices." This is a fact. By saying "may" vary, CFSAN implies that it is uncertain that this is the case.

In Section VD1.2, the Guidance reads: *"Generally in HACCP, wherever you rely on guarantees or certificates from suppliers to control a hazard, there is a need to couple these types of controls with a strong verification procedure, such as visiting the farm periodically or periodically testing the juice."* Owing to the suggestion two paragraphs above this (that a small processor can "accomplish this by ensuring that his apple pickers have been instructed not to harvest fallen fruit"), CFSAN might add to the above quote the suggestion that "a small processor who harvests apples from his own orchard" should inspect whether his workers are adhering to the instructions as well.

In section VD1.2 as well, CFSAN should suggest that the use of blacklight in visually scanning the incoming fruit to determine whether the fruit is dirtier than is visible to the naked eye might help in culling inappropriate product.

G. Example Documents

In Table 4 (Not from Concentrate Pasteurized Orange Juice), the example might be more compelling if it included controls for bulk juice obtained from outside of the U.S. Otherwise, perhaps it would be possible to demonstrate such as an additional table.

In Table 5, Excerpts from Summary HACCP Plan (For Pasteurized Refrigerated Apple Juice), under Critical Control Point 1, the receiving manager should also reject the fruit if it demonstrates that the guarantee required by the processor has not been followed. The

receiving manager should also cull the fruit that appears to be damaged because of microbial control issues.

Also in Table 6 Example HACCP Plan for Fresh Orange Juice, the *phrase "Review of required testing for biotype 1 E. coli"* might better be expressed as "Conduct sample testing of biotype 1 E. coli for verification of process." In general, the need to conduct testing of juice to verify that the process has not failed its microbial contamination purpose is not well highlighted in the Guidance. For example, testing the juice for microbial contamination is not described under Procedures/Steps for Fresh Orange Juice (VIIA3.0), nor is patulin testing described under the Procedures/Steps for Pasteurized Refrigerated Apple Juice. It would be desirable to see microbial testing described in text in these sections.

H. Recalls and Traceback

Over time, in various documents related to juice safety and other HACCP programs, CFSAN has made recommendations for processors to follow in order to implement a recall. While this Guidance document might not seem at first glance as a place to gather that information together, it is, in fact, the ideal vehicle for transferring that basic information. As processors go through and revise the documentation and recording procedures for the juice they produce, they would be well advised to create a batch identification system that would perform well under a recall. Many smaller processors do not have such a process and are unaware of what the best practices are for successfully distinguishing between batches. S.T.O.P. strongly recommends that CFSAN add a page to this document supporting processors in additional voluntary record keeping like batch identification, which would facilitate their followup on a breakdown in the HACCP process.

Likewise, the Guidance provides little information about how to address already-distributed product that is subsequently determined to have been subject to a breakdown of the HACCP process. CFSAN needs to fill in this important blank.

III. In Conclusion

CFSAN's Juice HACCP Hazards and Controls Guidance First Edition is an important first step in the direction of explaining and clarifying the Juice HACCP regulation. With attention focused on a few more critical areas that are not easily understood in reading the regulations, the Guidance could be improved. We look forward to reviewing the next version of the document.

Sincerely,

Laurie Girand
Juice Programs Manager
S.T.O.P. - Safe Tables Our Priority

Appendix A: Example Table

Food	Outbreak Organism	Outbreak Date	States	Number of Cases	Cases Age 0-5	Cases Age 6-10	Cases Age 11-15	Cases Age 15-20	Cases Age 20-50	Cases Age 50-60	Cases Age 60-70	Cases Age 70+	Immune Impaired Cases	HUS Cases/ Deaths	Size of juice production	Potential Sources of Contamination	Processes Used to Reduce Organisms
Apple Cider	E. coli 0157:H7	fall, 1991	MA	23										4/0		Drop apples contaminated with deer feces	
Apple Cider	Cryptospori dia	1993	ME	213												Students pressing at fair; shook apples off of trees onto ground at edge of cow pasture	Apples washed with chlorinated municipal water
Apple Cider	E. coli 0157:H7	1996	CT	10										2/0	9000 gals	Dropped apples used; multiple orchard sources	Apples washed and brushed; potassium sorbate added to cider
Apple Cider	Cryptospori dia	Oct, 1996	NY	32												Well water used for rinsing apples had coliforms; orchard located next door to dairy farm; pond water used to mix pesticides	Apples were picked, not drop apples; washed and brushed
Apple Cider	E. coli 0157:H7	Oct, 1996	WA	6												(Cider consumed at a church event)	Apples washed in chlorine solution
Apple Cider	E. coli 0157:H7	Aug-Nov, 1996	BC, WA, CO, CA	70	40?									14/1	>40,000 gallons	Dropped apples used/deer contamination; multiple orchard sources?	Apples culled, washed with phosphoric acid, brushed
Apple Cider	E. coli 0157:H7	Oct, 1997	MI	Recall/no detected cases											several hundred gals		
Apple Cider	E. coli 0157:H7	Oct, 1999	OK	17										3/0	500-750 gals/week	Tap water coliforms exceeded acceptable limits	TBD
Orange juice	Salmonella	July, 1989	NY	69												Worker	None
Orange juice	Unknown	Oct, 1989	CO	22												Worker	None
Orange juice	Salmonella	May-June, 1995	FL	63												Dropped oranges? irrigation water? Poultry fertilizer in vicinity? plant sanitation?	Phosphoric acid

Orange juice	Salmonella	June-July, 1999	AZ, BC, CA, CO, NM, NV, OR, TX, UT, WA, WI?	499										?/1	>40,000 gallons	Ice added to cool juice?	HACCP Plan, Post process testing
Orange juice	Salmonella	Nov, 1999	AZ, CA, CO, NM, OR, TX, UT, WA	Recall/no detected cases											>40,000 gallons	?	HACCP Plan, Post process testing